## Listing and Amendments to the Claims

This listing of claims will replace all previous versions and listings of claims in this application:

1-2. **(Cancelled)**

3. **(Currently Amended)** The method according to claim [[1]]20, further comprising ~~the steps of~~:

~~the hibernating device (401)~~periodically waking up the hibernating device to listen for beacons ~~(600)~~of other devices~~(401i)~~; and

~~the hibernating device (401)~~returning the hibernating device to ~~a~~ the hibernation mode if other devices ~~(401i)~~ have indicated no pending traffic for the hibernating device ~~(401)~~ in their beacons ~~(600)~~.

4. **(Currently Amended)** The method of claim [[1]]20, further comprising: ~~the step of other devices (401i) than the hibernating device (401)~~

keeping information on the presence of ~~the~~ a beacon ~~(600)~~of the hibernating device ~~(401)~~in ~~their~~ beacons of other devices ~~(600)~~during the announced sleep period duration of the hibernating device~~(401)~~.

5. **(Currently Amended)** The method of claim [[1]]20, further comprising ~~the steps of~~:

~~another device (401i)~~ including the address of a device transmitting the beacon Hibernation Information Element ~~the announcing device (401)~~ in ~~its~~a beacon transmitted by another device ~~(600)~~ in one of an information element ~~(604)~~ and field when the other device ~~(401i)~~has pending data for delivery to the ~~announcing~~ transmitting device~~(401)~~; and

~~the announcing device (401) staying~~ maintaining the transmitting device in an active mode if a beacon ~~(600)~~ with one of an information element ~~(604)~~and field including pending data for the ~~announcing~~transmitting device ~~(401)~~ is received before the ~~announcing~~transmitting device ~~(401)~~ ~~performs~~hibernates~~the hibernating step~~.

6. **(Currently Amended)** The method of claim [[1]]20, further comprising ~~the steps of~~:

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dividing time into a sequence of at least one superframe ~~(100)~~having at least one beacon period;

grouping beacons of different devices into at the least one beacon period ~~(101)~~; and

defining a sleep period as a plurality of superframes ~~(100)~~.


7. **(Cancelled)**


8. **(Currently Amended)** The method of claim [[7]]20, wherein ~~the including step further comprises the step of defining~~ the sleep period start time ~~(303)~~ ~~as~~ is a number of future superframes ~~(100)~~ relative to a current superframe~~(100)~~.


9. **(Cancelled)**


10. **(Currently Amended)** The method of claim 6, further comprising:
~~the step of~~ including ~~hibernation information, further comprises the step of transmitting a~~in the Hibernation Information Element ~~(300)in the beacon (600)that includes at least:~~
~~a starting time (303) of the sleep period;~~
~~a duration (304) of the sleep period; and~~a periodicity of the sleep period, wherein the periodicity is a sum of a number of superframes that the device will be in ~~a~~ the hibernation mode and a number of superframes the device will be in an active mode, wherein the active mode is defined as the device not being in the hibernation mode.


11. **(Currently Amended)** The method of claim [[1]]20, further comprising: ~~the step of~~
announcing, when a device ~~(401)~~ in an active mode has pending data to transmit to at least one intended receiver device, ~~(401i), it announces~~ the pending data by including a Traffic Indication Map Information Element ~~(351)~~in ~~its~~ a beacon of the device, ~~(600)~~ wherein the Traffic Indication Map Information Element ~~that~~comprises at least the device addresses ~~(353.i)~~ of the at least one intended receiver device ~~(401i)~~ of the pending data.

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12. **(Currently Amended)** The method of claim 6, further comprising ~~the steps of~~:

when in an active mode, the device (401) entering ~~-~~a device into a sleep state during a superframe ~~(100)~~ when the device is in an active mode and when there are no pending data transmissions for the device ~~(401)~~ that are announced in the beacons ~~(600)~~ of other devices~~(401i)~~; and

~~the device (401)~~waking up the device from the sleep state at the beginning of each beacon period~~(101)~~.

13. **(Currently Amended)** The method of claim 6, further comprising ~~the steps of~~:

when in an active mode, the device (401) entering a device into a sleep state during a superframe ~~(100)~~ when the device is in an active mode and when ~~it~~ the device has sent and received all data pending in the current superframe ~~(100)~~; and

~~the device (401)~~waking up the device from the sleep state at the beginning of each beacon period ~~(101)~~.

14. **(Currently Amended)** The method of claim 6, further comprising ~~the steps of~~:

when in an active mode, the device (401) entering a device into a sleep state during a superframe ~~(100)~~ when the device is in an active mode and when ~~it~~ the device is not involved in any of the transmissions that are announced in the beacons of other devices; and

~~the device (401)~~ waking the device up from a sleep-mode at the beginning of its own beacon period ~~(101)~~, and at the beginning of beacon periods ~~(101)~~ in which it does not transmit its own beacon ~~(600)~~ when the device ~~(401)~~ has at least one active data stream.

15. **(Currently Amended)** A communications network ~~(400)~~ including a plurality of devices ~~(401i)~~ that save power by announcing hibernation in their beacon frames ~~(600)~~ by performing the power-saving method of claim [[1]]20.

16. **(Currently Amended)** A wireless device ~~(401)~~ that saves power by entering at least one of a hibernation or sleep mode, comprising:

an antenna (507) for sending and receiving messages over a wireless medium (410);

a receiver (502) coupled to the antenna (507) to receive a message transmitted over the wireless medium (410);

a transmitter (506) coupled to the antenna (507) to transmit messages over the wireless medium (410);

a beacon processing module (504) to perform beacon processing for the device (401);

a processor (503) to divide time into a sequence of at least one superframe (100) having at least one beacon period (101) and operatively coupled to:

i. the transmitter (506) and the receiver (502) to send and receive data and respectively send and receive beacon frames (600) announcing the intention of the device to hibernate and beacon frames (600) indicating that other devices (401i) have pending data for the device (401),

ii. the beacon processing module (504) to:

a. process Hibernation Information Elements (300) of received beacon frames (600) of other devices (401i) and maintain therefrom a hibernation table (509) of characteristics of the other devices (401i);

keep the device (401) in an active mode if a received beacon (600) announces pending data for the device (401);

announce the intention of the device (401) to enter a hibernation mode at a start time (303) and for a sleep period (304); and

periodically wake up the device (401) when the device (401) is hibernating to listen for beacons (600) of other devices (401i) and to put the device (401) back into a hibernation mode if other devices (401i) have indicated no pending traffic for the hibernating device (401) in their beacons (600).

17. **(Currently Amended)** The device of claim 16, wherein the processor (503) is further configured to:

when the device (401) is in an active mode, place the device (401) into a sleep state during a superframe (100) when there are no pending data transmissions for the device (401) announced in the received beacons (600) of other devices (401i); and

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wake up the device (401) from the sleep state at the beginning of each beacon period (101).

18. **(Currently Amended)** The device (401) of claim 16, wherein the processor (503) is further configured to:

when the device (401) is in an active mode, place the device (401) into a sleep state during a superframe (100) when the device (401) has sent and received all data pending in the current superframe (100); and

wake up the device (401) from the sleep state at the beginning of each beacon period (101).

19. **(Currently Amended)** The device (401) of claim 18, wherein the processor (503) is further configured to:

when the device (401) is in an active mode, place the device (401) into a sleep state during a superframe (100) when the device (401) is not involved in any of the transmissions that are announced in the beacons (600) of other devices (401i); and

when the device has at least one active data stream, wake up the device (401) from the sleep state at the beginning of: its own beacon period (101) of the device (401); and beacon periods (101) in which the device (401) does not transmit its own beacon (600).

20.**(New)** A method for saving power in a wireless communication network including a plurality of devices, comprising:

transmitting a beacon Hibernation Information Element announcing a sleep period start time and a sleep period duration; and

hibernating in a hibernation mode during the announced sleep period duration, wherein a hibernating device does not transmit a beacon during the sleep period.